

THE PROPER LIGHT ON PRACTICAL PAINT MAKING



BY

TOCH BROTHERS
NEW YORK

ESTABLISHED 1848

HOW TO MAKE PAINT

“The QUALITY of which
will be remembered long after
the PRICE is forgotten.”

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1904

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NEW YORK

W. O. H. Martin

Established 1848

TOCH BROS.

Makers of Scientifically Prepared

— TECHNICAL —
Colors, Varnishes
and Japans
for Paint Making

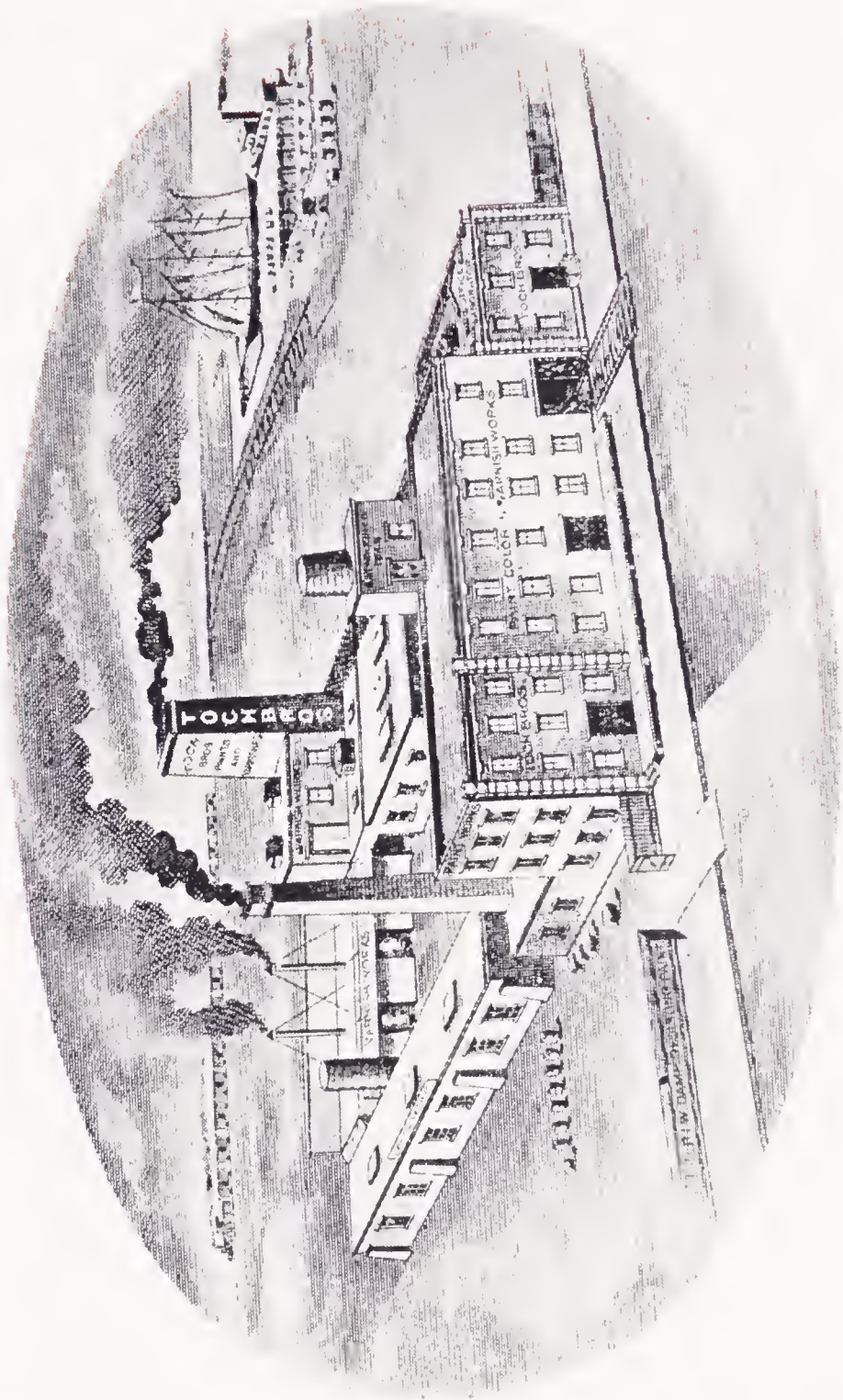
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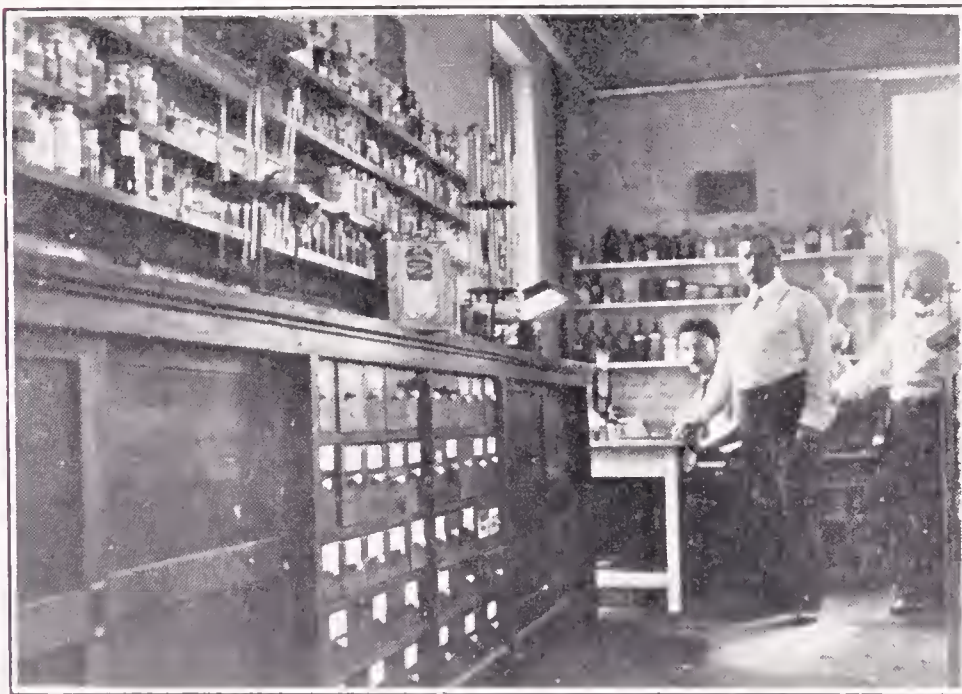
52-62 NINTH STREET
LONG ISLAND CITY

Office and Salesroom

468-472 WEST BROADWAY
NEW YORK







THE LABORATORIES.

To



Paint Makers
and Grinders



NE must be thoroughly posted on three important points in order to make good paint. First, the knowledge of the combination of the dry pigment and vehicle. Second, the knowledge of the nature and properties of the dry pigment. Third, the nature and resulting effects of the vehicle.

We shall attempt to guide you on the second and third subjects, and offer our guidance on the first subject to all those who find it to their advantage and interest to purchase of us dry pigments and vehicles. We shall attempt to describe what our dry pigments are, and to what uses they can be put, and the great importance the vehicles play in the manufacture of good paint.

Our laboratory, shown by the accompanying picture, whence emanate the analyses of paints and formulae for paint-making, is at the disposal of those who favor us with their valued orders for raw materials, varnish and japan specialties.

Our works, located at 52-62 Ninth Street, Long Island City, are as complete for color making, as well as varnish and japan specialties, as any in the United States, and we respectfully request an opportunity to demonstrate this.





113 A DROP BLACK.

THIS is a pure sheep-bone black in the manufacture of which we select the skull and shin-bone only; these being the hardest and making the densest black. This article is especially prepared with a view of attaining the best results for japan and oil paint grinding. So scientifically is it prepared that it grinds in at least 10 per cent. less shellac-japan than any other on the market; remains permanent; has great strength, and is guaranteed to be absolutely free from carbon, Prussian Blue or aniline dyes. Grinders can add these as they see fit, according to their own judgment. Price of this is 6c. per lb. in ton lots. Packed in casks weighing about 450 lbs.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



113 B DROP BLACK.

THE raw stock of this black is not quite up to the standard grade, and is therefore what might be termed "somewhat less free from oily influences," but it is purely a bone black and meets the requirements for the average grinding in oil and japan. Price for this in ton lots is 5c. per lb.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



PARIS BLACK NO. 94.

THIS is a high-grade carbon black, suitable for mixed paint making and grinding in oil. It is very powerful and extremely fine. Price of this is 6c. per lb. in ton lots.

NOTE.—We import and manufacture a full line of Vine, Mineral, Wood Blacks, etc.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



No. 137 OXIDE.

THIS is an excellent and powerful oxide, used primarily in making red oxide mixed paints. It is also an excellent pigment for the manufacture of brick-red, and will stand considerable reduction. The tone is slightly bluish. The color is prepared in the most careful way, making it easy to grind. Grinders who have adopted this color have had great success, more particularly for bridge and structural paints, owing to the great covering capacity and permanency of the color. Price of this is 3 1-2c. per lb. in ton lots. It is not affected by sulphur gases.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



BRICK-RED COLOUR

This is an excellent and powerful oxide, used primarily in making red oxide colored paints. It is also an excellent pigment for the manufacture of brick-red, and will stand considerable reduction. The tone is slightly bluish. The color is prepared in the most careful way, making it easy to grind. Grinders who have adopted this color have had great success, more particularly for bridge and structural paints, owing to the great covering capacity and permanency of the color. Price of this is 3 1/2-45. per lb. in 100 lbs. It is not affected by sulphur gases.

THIS SAMPLE IS THE ACTUAL COLOR OF THE COLOUR, IT IS NOT MADE BY A MIXTURE OF WHITE AND A LITTLE COLOUR



No. 178 OXIDE.

THIS has much the same properties and nature as the No. 137, the difference being that it tones to the yellow, which is very much sought by many grinders. For Paper, Plaster and Cement Staining this color has many advantages.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



No. 504 OXIDE.

VERY beautiful mixed tones can be made from this color. It is also advantageously used for oil or japan grinding for railroad-car painting.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



No. 402 OXIDE.

THIS is a beautiful maroon shade of oxide, on the Tuscan order, containing 96 per cent. of iron. It can be colored with our Tuscan Toner, making it a desirable pigment for japan or sign work. Price of this is 6 1-2c. per lb. in ton lots.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



No. 465 PERMANENT CARDINAL

RED.

THIS is the first of the series of permanent cardinal reds that was offered in this country, and we have had great success with it. A number of our customers are grinding it and supplying railroad, wagon, carriage and sign painters. It is very brilliant and soft, grinds easily and remains soft. The color is similar to Deep English Vermilion glazed with carmine. It is used in making deep shades of Ready Mixed Vermilion, also Ready Mixed wagon paints containing varnish. This same dye can be precipitated on a cheaper base where low price is desired. The paint, however, on that base would be different from the one containing the 465 Perm. Card. inasmuch as it will not be so brilliant or lasting a paint. We would recommend that where this color is desirable but cannot be used on account of price, that you use in conjunction with this our Lake Base, which is described later on. Price of the No. 465 Perm. Cardinal is 23c. per lb.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



STRENUOUS RED.

THIS color is made to meet the demands of a cheaper Permanent Red, and contains other dyes besides Permanent Red dye. Price of this is 18c. per lb.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



No. 341 HYPERNIC MAROON.

THIS is a Bordeaux or wine color made from the extract of alcanet root. It is very desirable for oil color grinding, mixing varnish stains and colored lacquers. Price of this is 25c. per lb. It is also used for grinding in distemper for fresco and decorative work.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



No. 454 COCHINEAL LAKE.

THIS is very useful for similar purposes as the Hypernic Maroon, and is also used for making calcimine tints. This, however, is more of an analine than a wood extract, although it contains a certain percentage of Brazil wood. Price of this is 14c. per lb.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



ENGLISH ROSE LAKE.

THIS is used for grinding, but more particularly for decorative work. Price of this is 20c. per lb.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



TUSCAN TONER.

THIS is a powerful concentrated dye to color Indian Red and oxides generally, also for grinding in oil. It remains permanent.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



No. 703 TURKEY RED.

THIS is an Azo color used in varnish stain manufacturing, but more largely for decorative and fresco work. Price for this is 15c. per lb.

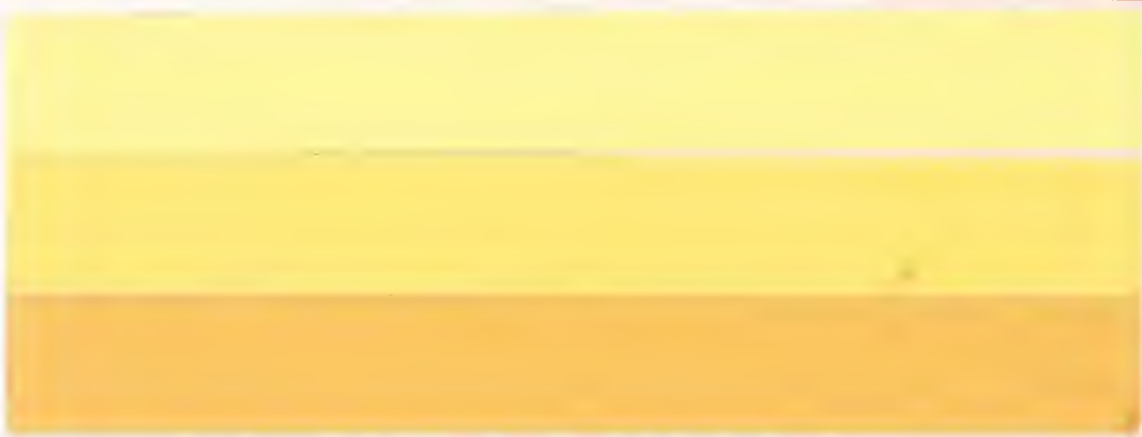
THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



YELLOW LAKE 00.

THIS is a brilliant yellow for grinding in oil and japan, and glazing, or mixing in Prussian and Chinese blue for making forest-green varnish stain. Also used as a decorative color when ground in distemper. It is made from the extract of Quer Citron.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



MILORI YELLOW.

THIS is a powerful high grade of chrome yellow, made on the order of lithographic yellow. Where grinders are desirous of producing clearly brilliant yellow they will find it to their advantage to use this grade. They do not possess the muddy tones so prevalent in chrome yellows. Price of this is 14½c. per lb. We have this in medium, orange and dark-orange shades, the dark orange being 16c. per lb.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



NARBONNE GREEN, LIGHT, MEDIUM
AND DARK.

THIS is a carefully-prepared green which does not separate after being ground. The tone is brilliant and gives universal satisfaction. 8c. lb.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



C. P. MILORI GREEN.

THIS green contains no adulterant. The grinder can add whatever he desires, thereby cheapening the price. A better color than this cannot be produced anywhere. It is made exactly as the original Milori colors of France, the tone being identical, only the price being one-third less. It is also the strongest green known to science. Price of this is 25c. per lb.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



CHINESE BLUE.

IN offering this blue we feel confident that the grinder who is desirous of making a delicate blue tint will find the article he has been in search of. It took many years to produce this color, which is totally free from the gray or lavender so common among the Chinese blues generally offered. Price, market.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



TYROL VERMILION.

THIS beautiful color is a unique preparation, remaining soft when ground in oil or japan, thus making it very desirable for ready mixed wagon paints containing varnish. In shade it resembles the genuine English Vermilion light, and in wearing quality we consider it superior. The base used for making this color is the highest grade of foreign orange Mineral, and will give universal satisfaction. Price of this is 22c. per lb.

Dozens of various shades of colors can be produced for japan color grinding by mixture of the various lakes of the foregoing description in proportions to suit yourselves.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



OLEUM WHITE.

THIS white was introduced by us in 1886, and we believe that we were the first to offer it in this country. Although liberally used in Germany, England and France, paint makers in this country have not adopted it so readily, although we have among our customers a number of standard concerns who use it. It is a sulphide Zinc commonly known as Lithopone, the difference, however, being that it contains our Lake Base (Blanc Fixe), which makes it fluffier and softer white than any other on the market. Table oilcloth, Toy Tinware and Frame Manufacturers have met with great success, as have enamel-paint makers, who have followed our instruction by using an enamel varnish made by us, which is free from lead. Care should be taken that lead in no form whatever comes in contact with it, as it forms lead sulphide. It contains about 32 per cent. of Zinc, nevertheless it is three times as strong as Zinc Oxide of 100 per cent. purity and much more opaque.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



No. 457 FLORENTINE LAKE.

THIS is one of those beautiful rich maroons, made as those class of colors have been made for many years and prior to the time that analine dyes were known. An excellent, reliable lake for grinding in japan or oil, or making varnish stains and for decorative work. A richer and clearer toned deep maroon cannot be produced to our knowledge. Price 40c. per lb.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



No. 458 Madder Lake.

A BEAUTIFUL red strong color made from the Alizarine dye, used for high-class japan color grinding, as well as fresco and decorative work.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



ENGLISH ROSE LAKE.

BEAUTIFUL, rich, strong color, suitable for grinding in japan and oil and for decorative work. Made partly of wood extracts and partly of aniline dyes. Will stand much reducing where a particular color of this shade is wanted at a low price.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



TURQUOISE BLUE.

SOMETIMES called Riviera Blue. This is made to take the place of the old Bremen Blues or Verditer Blues in which copper was so largely used in their manufacture, being made of a base dyed with delicate anilines. It is not suitable for grinding in oil, but very desirable as a fresco, distemper or scenic color.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



No. 505 VIOLET LAKE.

VERY rich in tone, suitable for carriage work to be ground in japan and for fresco and scenic work.

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.



LAKE BASE.

THIS wonderful article was introduced by us in the dry state some years ago, though it had been known and used in pulp form by French and English color makers. We conceived the idea of offering it dry after thoroughly washing and drying at low temperatures, and can safely say that there are but few high-class paint manufacturers in this country where this material is not found as portion of their formulae. Let us take, for instance, the manufacture of enamel paint. If 10 per cent. of Lake Base is used, it is the means of keeping the zinc, varnish or the oleum white in suspension so that the least shaking of the can makes the paint ready for use. In japan color grinding a percentage of from 5 to 10 per cent. will keep the japan color softer much longer than when the material is omitted. The prod-

THIS SAMPLE IS THE ACTUAL SHADE OF THE COLOR, IT BEING MADE BY A MIXTURE OF WATER AND A LITTLE GLUE.

uct is inert and has absolutely no body, so that one can safely add about 20 per cent. of the material to any given color and the naked eye cannot detect that the material has been added to it. It is used to prevent lakes from livering. This is an article which cheapens your product without deteriorating it or detracting from its merit. Every paint is improved by this material when used. An actual test will convince. As another instance, take chrome yellow or chrome green and add 10 per cent. of Lake Base to your mixture and paint a board and expose this board for six months. At the same time paint a board with the same material without the Lake Base and expose it for the same length of time and you will find that the color containing the Lake Base will appear brighter and fresher than that in which it has not been used. Price of the Lake Base is 4c. per lb. in ton lots.

We have herewith shown you a few of our leading dry pigments, of which we have an assortment of about 700 colors. Send us sample or tell us what you want matched and we will gladly respond to the best of our ability, and feel certain that we can make it of interest to you.

The foregoing prices are for original packages: for kegs add 1c. a lb., for boxes 2c. a lb.

THE CHEMISTRY OF COLORS.

HISTORICAL AND TECHNICAL ACCOUNT OF THE CHEMICAL PAINTS.

*Lecture before the College of Pharmacy of the City
of New York.*

AT a stated meeting of the College of Pharmacy of the City of New York, held in the college building on Tuesday evening, January 20, 1903, Dr. Maximilian Toch delivered a lecture on "The Chemistry of Well-Known Colors," illustrating the chief points in his paper by experiments and colored lantern slides. The lantern slides exhibited by him included pictures of butterflies, fruits, flowers, etc., artistically executed and beautifully colored with anilines, showing the wonderful variety and delicacy of tints and colors obtained from this source.

In introducing his subject Dr. Toch made allusion to the popular definition of the word paint. "When the word paint is used," said he, "the general and popular impression is that it is some color which is used as a decorative or protective coating on the wood or iron work of buildings. It is quite true that large quantities of paint are used for such purposes, but taking it all in all, the amount of paint consumed on houses and structural work, which is by far larger here than in any other country, is not by any means the largest consumption of paint itself, even though almost every city or town has its paint

factory. Paint is used in large quantities for the manufacture of oilcloth, rubber goods, table oilcloth, window shades, wagons, boats, railroad cars, wall paper, linoleum, printing ink, etc. The consumption of house paint is much smaller in proportion to the consumption of paint for the manufacturing industries." Speaking of the manufacture of chemical paints used as raw materials from which which finished colors are made, he said:

"These chemicals or raw materials are ground in a suitable medium or vehicle, such as oil, varnish, water and the like, and they then form oil colors, varnish colors, distempler colors, enamels, etc., Upon the property of the raw material depends the permanency of the finished colors, and as a great many colors or pigments have inherent defects, it is the object of the paint manufacturer continually to improve his products and omit those that are defective.

THE ANCIENT METHOD OF MAKING WHITE LEAD.

"The first and the best known of the paints is white lead, and it is a strange fact that the old method of making white lead, known as the Dutch method, is still in vogue to-day, with perhaps slight modifications. The Romans and the Greeks used the native carbonate of lead, known as the mineral cerusse or cerusite, and the French name for white lead is still cerusse. The method of making white lead by the aid of vinegar and spent tan bark was patented as far back as 1622, and was supposed to have originated in Holland, hence it is known as the Dutch method. An earthenware pot is used, which resembles a crucible, and in this pot is a little shelf about half way up, on which buckles of lead are placed, a small quantity of weak acetic acid or vinegar being placed in the bottom of the pot. Hundreds, or perhaps thousands, of these pots are placed in a chamber which is entirely closed up. The tan bark begins to ferment and gives off quantities of carbonic acid gas; the vinegar is vaporized and at-

tacks the lead; the carbonic acid then slowly changes the blue lead into a carbonate lead, and at the end of three months the corrosion is fully completed and the white hydrated carbonate of lead is formed.

THE NEW METHOD OF MANUFACTURE.

“There are any number of these methods and likewise a number of new methods of manufacture, but it is a question which has been disputed time and again whether the new methods, which are called ‘quick process,’ produce better white lead than the old method. The new methods may be simply described as being the formation of lead carbonate from the solution of lead salt and carbonic acid. I show you here the manufacture of white lead by what is known as the wet method, which is very simple, and under certain circumstances produces a very excellent product. This method was patented by Noble, under the name of the Thenard process in 1808. The manufacture of white lead by the old method is in itself a poisonous one, and it is an interesting fact that in one of the short stories written by Charles Dickens, called ‘A Bright Star in the East,’ he describes a visit to one of the white lead plants in the East End of London. This story was written in 1850, after his first visit to America, and he asserts in it with some degree of conviction his belief that American ingenuity would overcome the danger to the workmen. It is a gratifying fact to record that in American white lead works lead poisoning is almost unknown.

THE DEFECTS OF WHITE LEAD AND THE ADVANTAGES OF ZINC OXIDE.

“White lead has the one defect that it will not stand sulphurous gas of any kind, and it blackens very readily when subjected to the fumes of sulphuretted hydrogen. I show you the effect of the

sulphuretted gas on white lead, and you will immediately notice that it turns it from a brilliant white to a dirty brown. This is the reason why zinc oxide is so largely used for the painting of stables and outhouses, and the walls of rooms where permanency in whiteness is desired.

"The use of zinc oxide within the last twenty years has increased enormously, and it appears that its use will increase still more. It remains white, and is not affected by the sulphur gases, for the reason that its sulphide is white. The French method for making zinc oxide is by the direct oxidation of the metallic zinc. The American method is by the direct calcining of the zinc ore, and I exhibit a piece of enamel cloth made entirely of zinc oxide. The new zinc paint is a sulphide made by the double decomposition of zinc sulphate and barium sulphide. This material is sold under the name of Oleum white, Beckton white, Charlton white or Lithopone and possesses a great many advantages, particularly for the manufacture of linoleum and oilcloths. It is not acted on by sulphuretted hydrogen because it is completely saturated with sulphur.

CHROME YELLOWS.

"If a solution of lead acetate and potassium bichromate be mixed together a lead chromate is formed of a medium shade. If an acid such as sulphuric or citric be added to the potassium bichromate a lemon of a pale shade is produced. If an alkali such as lime or potash be added an orange shade is produced, and thus we have the range from a lemon yellow to a deep orange made in the manner described. In the manufacture of all precipitated colors the concentration and temperature of the solutions and the speed with which the solutions are combined have a remarkable influence on the shade and fineness. Therefore if we take concentrated solutions and throw them together rapidly we produce heavy and dull looking shades, and if we have cold solutions which are very dilute and which are

allowed to come in contact very slowly we have brilliant and light gravity colors.

"In the manufacture of chemical colors it may be opportune to state that it is necessary to make solutions in their atomic proportions so that no waste occurs. One hundred pounds of lead acetate will require thirty-nine pounds of potassium bichromate, so that the precipitate forms lead chromate entirely and the supernatant liquid forms potassium acetate.

"Of the greens I shall speak after I have discussed some of the blue pigments, because the greens are chiefly a mixture of the blue and yellow. Cadmium sulphide is a very expensive yellow color, ranging in price from \$3 to \$8 a pound. It is used nowadays only as an artists' color for painting pictures. It is made by the addition of a sulphide to the cadmium salt. Chrome yellow, which is full as strong in tinctorial power, ranges in price from 15 to 30 cents a pound. In the days of horse cars cadmium yellow was used as a yellow pigment because the sulphur gases of the stable did not affect it, but the trolley car has supplanted that.

BLUES.

"One of the most wonderful pigments made is ultramarine blue. It is perhaps the first synthetic color ever manufactured. The natural ultramarine blue is a blue mineral (lapis lazuli) which is found in Siberia, Persia, and China, and is only for decorative purposes. It was formerly used for painting, and is a most perfect pigment, although it has not very much body. In 1828 both Grunnet and Gmelin, of France, succeeded in making an artificial ultramarine blue which equaled lapis lazuli in composition. It is a very strange fact that the products which go in the manufacture of ultramarine blue possess no characteristics of the finished material. Briefly stated, when a mixture is made of china clay (aluminum silicate), sodium carbonate, sodium sulphate, sulphur and charcoal, it produces a bril-

liant blue, which is largely used as a wash blue, in making blue paper, and as a permanent pigment for house painting and for making printing inks. It cannot, however, be used in conjunction with white lead, because the sulphur it contains is likely to blacken the lead. It is a non-poisonous color and is also used for whitening refined sugar.

"PRUSSIAN BLUE

Is a mixture of a salt of iron, and it depends very largely on the physical condition whether a brilliant blue or a dull blue is obtained. It is a poisonous compound, being practically a ferric ferrocyanide of iron. Most blues are made with iron sulphate, which first produces a whitish precipitate, and this is then oxidized with nitric acid or potassium chlorate or bleaching powder. The various grades, which all have about the same purity, but differ largely in their tone, are sold under the name of Prussian blue, steel blue, Chinese blue, milori blue, bronze blue, etc. Prussian blues are the basis of all the chrome greens of commerce, which are made by the addition of any of these blues to chrome yellow. In practice, however, the blues are not made separately, but the lead salt, the iron salt, the yellow prussiate of potash and the bichromate of potash are precipitated alternately. The Prussian blue and the chrome greens are very permanent colors, and work well in conjunction with white lead. Ultramarine blue does not work well with white lead, as the sulphide is likely to combine with the lead and blackens it. Therefore, in making blue tones with lead it is necessary to use Prussian blue. Ultramarine and Prussian blue both work well with zinc. Prussian blue has a peculiar property, it being soluble in linseed oil at a temperature above 400 degrees. It converts the oil into an extremely elastic and glossy varnish. This varnish is used entirely for making patent, or enamel, leather, and black enameled oilcloth. It is found in practice that an

imitation of Prussian blue, known as japanners' brown, can be made by the decomposition of Chinese blue at a high temperature in the presence of carbonic acid gas. It makes a much more permanent film of linseed oil than Prussian blue or Chinese blue.

LAKES.

"Brilliant pigments which are more or less transparent, and generally made from organic dyes, precipitated or mineral bases, are termed 'lakes,' and the oldest and perhaps best known of these lakes is carmine. Carmine has been known for three centuries. It is the coloring matter of the dried cochineal bug, which is precipitated with alumina. This coloring matter is practically an acid, which, combined with alumina, forms an alumina lake. Pure carmine is completely soluble in ammonia and is non-poisonous. In former years it was used to a very large extent as a decorative paint, but the aniline colors have practically driven it out. It is, however, used as a coloring matter for candies and syrups. The aniline lakes are all precipitated in much the same way as carmine, depending, however, largely on their chemical compositions. Some are treated with chloride of barium, some with tannic acid, some with lead salt and some are developed.

"When coal tar is distilled one of the first derivatives is known as benzole, and is well described in the benzine series. When this benzole is treated with nitric acid nitro-benzole is formed, and when nitro-benzole is again treated with iron in the presence of hydrochloric acid an aniline oil is then produced which is the progenitor of certain aniline colors. The subject of aniline colors is too vast for extended reference here. Many of them are acted upon by acids and alkalies only to form different colors; some of them are developed and others are made by direct fusion and melting, and still others are made synthetically by low temperature in the presence of ice."

PAINT-MAKERS' VEHICLES.

THE best paint in the world can be destroyed by the use of japan, and firms who thought they knew how to make paint have from time to time had complaints and their goods returned. While they used the purest linseed oils, turpentine, oxide of zinc, carb. of lead, etc., they could not possibly perceive why their paint cracked and faded. Now, under positive scientific researches, we can state that the dangerous articles known as japan or liquid dryers, have been the cause of the instability of their otherwise pure paint. After much experimenting, practical, chemical and scientific, we have placed on the market our "Flex Sicco Japans." Here you have a japan which will not curdle the oil, which mixes freely with it, which does not destroy the lustre of the oil, and preserves the elasticity. Destroy the elastic quality of the oil, your paint is bound to peel, crack and chalk. Harmful dryers have been the cause of so much paint turning out poorly. For general mixed paint manufacturing, we offer our Flex Sicco Japan at 75c. per gallon. Our special Flex Sicco Japan for japan color grinding at 90c. per gallon, and the best grade of Flex Sicco shellac japan that is made at \$1.30 per gallon.

ENAMEL VARNISHES.

WE offer you a line made as scientifically correct as our Flex Sicco Japan, ranging in price from 65c. to \$3.50 per gallon. A good average article at 90c. per gallon, and one that will rub and polish at \$1.30 per gallon. Some of our customers make a mixture of the 90c. and the \$1.30 grade, some of the 65c. and \$1.30 grades. If you are in search of an enamel varnish for ordinary house work, etc., the 65c. does wonderfully well.

FLOOR PAINT HARDENER.

HERE is another scientific and technical varnish that has caused us to experiment long and carefully. We make a line of floor paint Varnishes that are wonderfully elastic and durable. The cheapest of this kind is 65c. per gallon, another at 85c. and another at \$1.05. Our best grade is \$1.35, which is a floor finish and hardener combined.

TOKAURI MIXING VARNISH.

THIS is a high grade of mixing coach varnish used when wear and tear are expected, combined with the appearance. Price of this is \$1.30 per gallon.

WHITE JAPAN.

THIS has been the stumbling block of all varnish makers. We offer you the lowest priced of our white japan at 75c. per gallon, and the white Flex Sicco shellac japan at \$1.30 per gallon, and can safely say that no other varnish house has ever succeeded in placing an article like this on the market, although it had been attempted for years. In this descriptive pamphlet we shall not mention the other varnishes we make, such as Furniture, Cabinet Rubbing and Polishing, Hard Oil Finish, etc., confining ourselves to those articles used in good paint making.

We stand prepared to supply you with as small a quantity as you may order, so that you can make your tests, offering you our assistance as stated in the preface of this booklet.

When you consider that since 1848 we have constantly striven to put upon the market the best materials for good paint making, we feel reasonably certain that you will have every reason to feel safe in giving us your valued orders for pigments and vehicles.

FLEX SICCO ENAMEL VARNISH.

A TRIAL will convince you that this varnish is really perfection. Not alone does it dry hard and with an extreme gloss when mixed with zinc, yet it is not brittle and has a flexibility that has never been known to exist in any varnish of this kind. The very finest enamel paints in the world can be produced by this material.

Price \$2.50 per gallon. Special figure in large lots.

The above sample of Flex Sicco Enamel Paint is made with Flex Sicco Enamel Varnish and painted on cloth. Bend it and note its wonderful elasticity. It disproves the general idea that all Enamels must be brittle.

In France and England there are Enamel Paints made that sell at \$6 per gallon. Some of these are imported and used here.

You are now in position to make these goods out of our products, and make them better and for much less. Experiment with our Flex Sicco Enamel Varnish. You will soon adopt it and make money and fine goods.

C ONTINUED research on our part, we believe, will result in new pigments and vehicles from time to time. It is our intention to describe them fully to you when we are satisfied that they are of value to you. We therefore request you, in order to help make this work complete, to reserve the following pages marked addendum for the new samples and information that we will send you, pasting the printed matter on the addendum pages.

The difference in packing varies from time to time by reason of cooperage, and that is why we do not mention how heavy the barrels are.

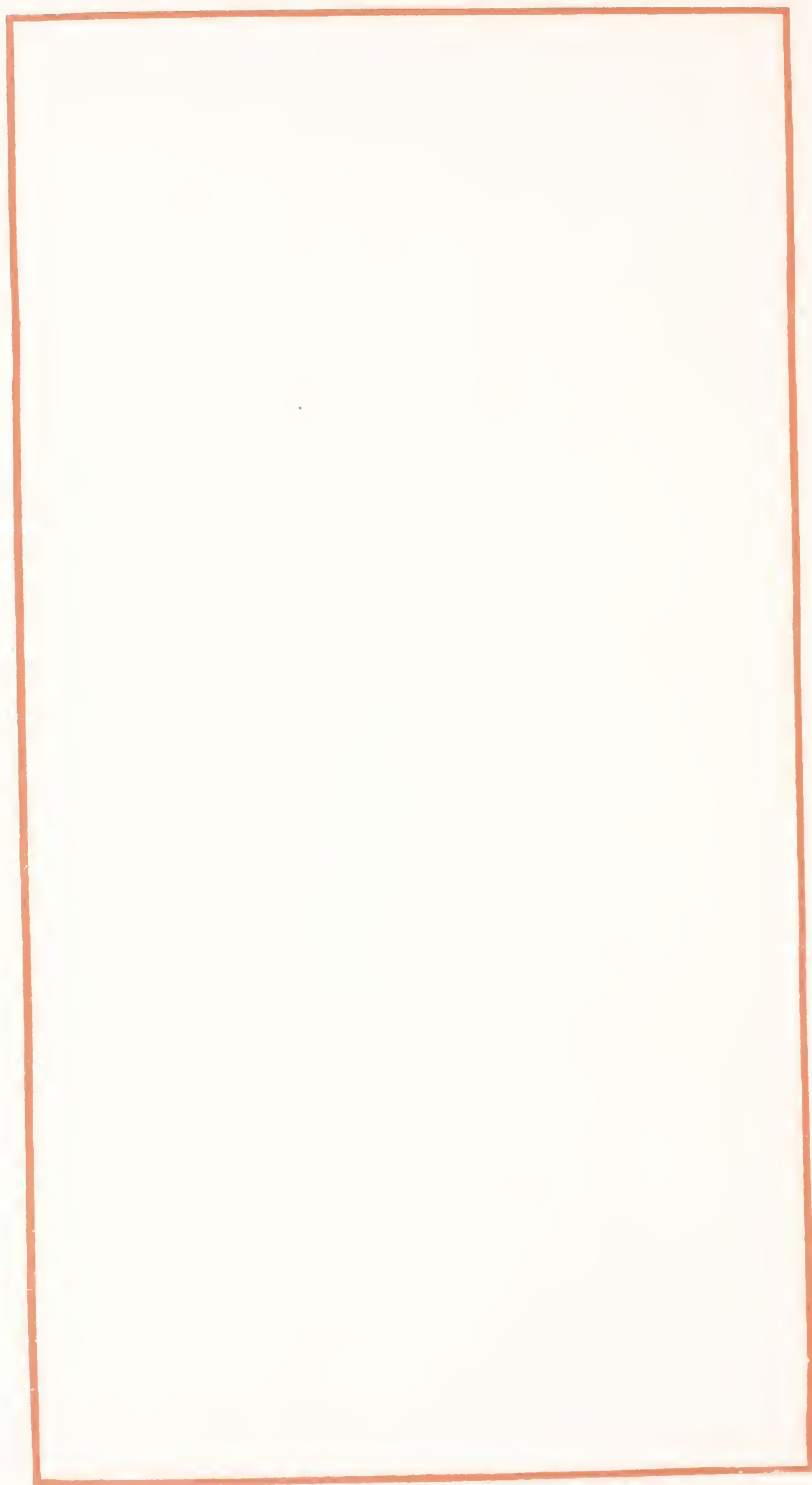
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